# SSA IT Modernization Proposed Plan

## July 12, 2016

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# Abstract

This proposal describes the scope and approach required to modernize the Social Security Administration's IT infrastructure into a set of digital services. This proposed plan provides justification and establishes oversight for the $300M requested in the President's FY17 budget.

In the pages that follow we define the problem, establish technical and business outcomes, and establish a series of scoped products. We suggest a user-centric agile approach and outline techniques to oversee this approach. We provide a set of guiding principles to help us attain the outcomes. We describe a roadmap with the modernization of our Title II, Title XVI, Enumeration, Notices, and Earnings applications. We describe ongoing efforts to modernize our data infrastructure and efforts to deploy these applications and databases in the cloud. We suggest steps to modernize our IT staff along with the technology and modernize our business processes at the same time. We provide a preliminary cost model that lays out spending.

# Executive Summary

The Agency views IT Modernization as a critical priority. There are three reasons for this:

– The IT staff who developed these legacy systems are retiring and we must retire the systems with the staff by retooling to ensure that we can continue to provide service to our customers;

– We cannot significantly reduce either IT costs or staff costs without modernization. In today's fiscal environment we need an investment to provide a return; and

– We need to retool and use technology to better serve the public. This is the real reason for the request. The modern tech expected by the public cannot be embedded into 25 year old legacy systems. We can engage the customer better, even delight them, if we retool.

For the $300M requested, we will modernize five critical applications and the data infrastructure under them. We will extend our data centers into the public cloud, develop an on premise cloud capability, and then tie them together into a hybrid cloud.

Importantly, we will develop these new digital services with a customer focus based on the principles of user-centric design.

# Outcomes

IT Modernization is often a technology-focused endeavor where legacy IT systems are refactored into modern infrastructure with little or no modification to the business process or to application functionality. The Agency's business processes are out of date, thus we believe simultaneous modernization will yield positive business and technical outcomes.

- Technical Outcomes
  - Cloud computing reduces costs to operate modern systems
  - Service oriented architecture reduces costs to maintain and extend application logic
  - Shared services and/or modern programming languages reduces the amount of code to be developed and maintained
  - Built-in support for analytic data extends ability to support data-based decisions

- Business Outcomes
  - Reduced overpayments due to improvements in automated Quality Assurance processing
  - Improved employee productivity due to a modern, user-centric, user interface
  - Self-service applications reduce workloads and make staff more efficient
  - Automated support for outlier cases reduces Processing Center workloads
  - Automated assist for determinations reduces adjudication wait times

# Scope

Five applications will be modernized in the scope of this program:

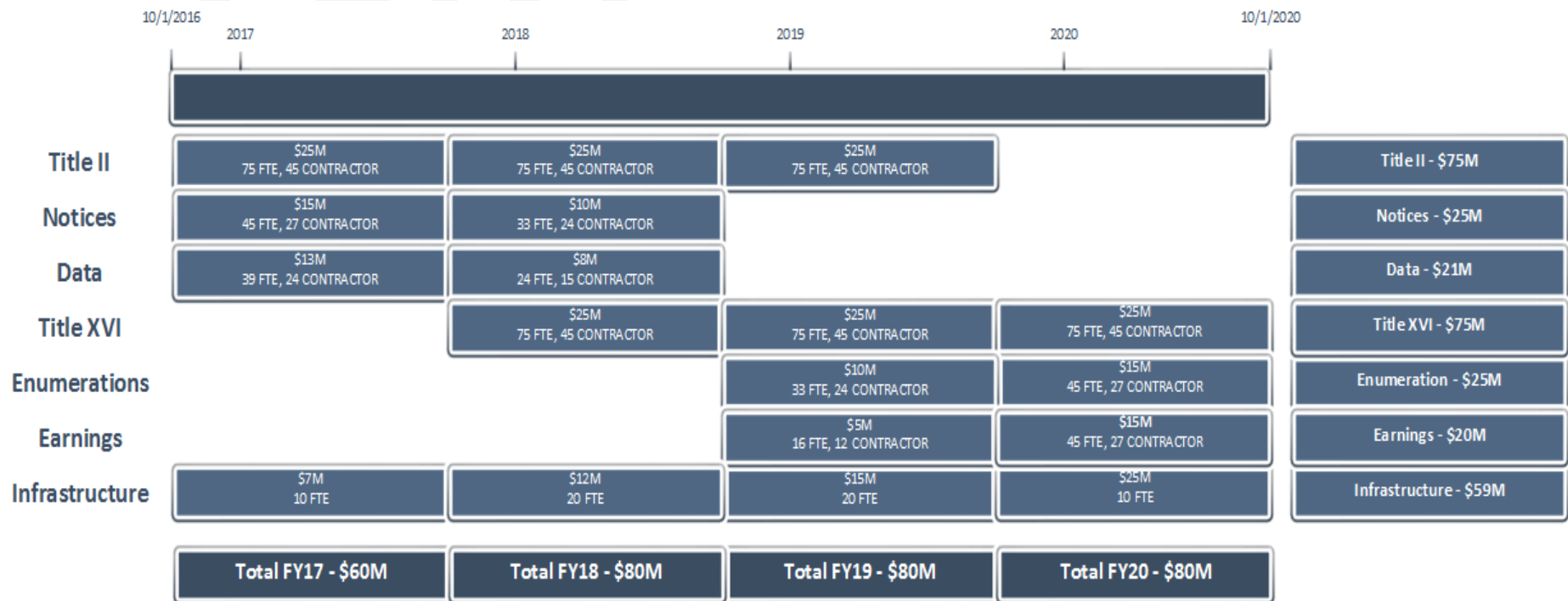- Title II
- Title XVI
- Notices
- Enumerations
- Earnings

For each, the data and systems infrastructure will be modernized along with the application (see Approach).

In addition, the funds will be spent to modernize our email infrastructure by moving it into the cloud.

Each of these applications consists of a series of inter-connected business processes. Appendix A lists each of these business processes as a fine-grained description of scope.

# Roadmap and Costs

The picture below represents our preliminary estimates of costs for the five modern business applications and for the underlying infrastructure to support them. Included is the cost for each annual increment for each product, as well as the number of federal FTEs and contractor FTEs estimated. We will continue to refine the cost model and replace these numbers as we begin the Modernization Program.



| | 2017 | 2018 | 2019 | 2020 | Total |
|---|---|---|---|---|---|
| Title II | $25M / 75 FTE, 45 CONTRACTOR | $25M / 75 FTE, 45 CONTRACTOR | $25M / 75 FTE, 45 CONTRACTOR | | Title II - $75M |
| Notices | $15M / 45 FTE, 27 CONTRACTOR | $10M / 33 FTE, 24 CONTRACTOR | | | Notices - $25M |
| Data | $13M / 39 FTE, 24 CONTRACTOR | $8M / 24 FTE, 15 CONTRACTOR | | | Data - $21M |
| Title XVI | | $25M / 75 FTE, 45 CONTRACTOR | $25M / 75 FTE, 45 CONTRACTOR | $25M / 75 FTE, 45 CONTRACTOR | Title XVI - $75M |
| Enumerations | | | $10M / 33 FTE, 24 CONTRACTOR | $15M / 45 FTE, 27 CONTRACTOR | Enumeration - $25M |
| Earnings | | | $5M / 16 FTE, 12 CONTRACTOR | $15M / 45 FTE, 27 CONTRACTOR | Earnings - $20M |
| Infrastructure | $7M / 10 FTE | $12M / 20 FTE | $15M / 20 FTE | $25M / 10 FTE | Infrastructure - $59M |
| | Total FY17 - $60M | Total FY18 - $80M | Total FY19 - $80M | Total FY20 - $80M | |

# Approach: Agile

We intend to develop using Agile methods and a product frame-of mind.

Taking a product approach means that we will not suggest there is an end to the program. It is not a project. We will continuously improve the product as long as the improvements to be developed justify the expense of the development team.

**User-centric**

Agile suggests that we will develop iteratively driven by the users of systems with the aim of delivering significant new functionality in releases 2-4 times a year. As each release comes to a close the users – our employees and our customers - will help us choose the next most import functionality. This agility to iteratively choose what is important as you go allows us to adapt to changing priorities... but it intrinsically makes the end game a moving target.  In the section Cost Control we will suggest an approach to manage this dynamic methodology.

# Approach: Agile and the First Release

The best practice around agile development suggests that the first step is to build a skeleton for a business process end-to-end and then to start adding functionality, meat, to those bones.

This means that the first step is to identify the core concepts, the skeleton, for each modernized process.

For example, many of our processes are built around the concept of a case. Filing for disability begins with establishing a case to be worked. For these processes we might build or buy software infrastructure to manage cases and then start building functionality to open a case, process a case, make a determination, and close a case… from front-to-back.

Our experience with modern development tools and processes suggests that we can build out a minimally viable product (MVP) end-to-end in 12-24 months. Once an MVP is in place functionality can be extended using agile methods.

# Oversight & Management

The nature of an Agile development process requires a new approach to track progress and ensure fiscal responsibility.

**Executive Management at the SSA**

The Deputy Commissioner for Systems will manage this modernization effort through a special program office whose lead has the authority to manage across the Agency.

**Outside Oversight**

Congress, the OIG, GSA, and OMB require mechanisms to monitor agile product development. These mechanisms include:

• Run Rate and Backlog Value Proposition

• Measuring Velocity

• Iterative Review of Deliverables, and

• Measuring Story Points

In the past we have provided outside oversight quarterly updates and we propose to deliver measurements from one or more of these mechanisms during these updates.

# Guiding Principles: Customer Connect

| CHRIS' LIFE EVENT | ASSOCIATED ACTIVITIES | CHANNELS IN | DECISIONS | CHANNELS OUT | CHRIS' EXPERIENCE |
|---|---|---|---|---|---|
| For every life event… | What are Chris' associated activities for this life event? | What are the channels coming into SSA about Chris? | What are our internal decisions? | What are the channels going out to Chris? | What is Chris' customer experience like? |

Nine months ago the Agency started considering a dramatic proposition: what would our customers consider first rate government services in five years. We asked our agency colleagues to consider:

- Customer engagement envisioned with none of the current IT systems constraints… we will rewrite the systems as part of IT Modernization;

- Customer engagement from our customer's perspective… not from the Agency's perspective; and

- Customer engagement in a world five years out where what we see as cutting edge today is by then passé.

The result was remarkable…

Staff imagined a World where we would dispatch driverless cars to pick up customers with disabilities and transport them to and from required continuing disability exams…

They imagined a World where artificial intelligence would assist staff in sorting through medical evidence to make faster and more accurate determinations…

They imagined a World where customers would opt in to allow the Agency to fill out complex applications using data from other Government and non-government sources…

This New Think is critically important to our modernization efforts… it informs us as we modernize and drives us in directions that we might otherwise over look.

The Agency is ready for this…

# Guiding Principles: Technology & Architecture

**What is a Modern IT Infrastructure?**

It is important to note what we mean by IT Modernization and establish a target for the resulting technology. It is not particularly useful to take a large monolithic chunk of legacy COBOL code and produce a monolithic chunk of JAVA code.

We believe that the target architecture needs to execute on a distributed cluster of commodity servers and be designed in a scalable manner.  In other words, a modern application needs to run smartly in a cloud computing environment.

A modern application should use a service-oriented architecture and should favor deployment in containers.

A modern application needs to be developed in a modern open programming language currently taught in the majority of college and university systems in the USA.

A modern application needs to service online transactions in real time and service analytic transactions in a reasonable timeframe.

**Buy vs. Build**

When there is value in buying software instead of building it, this should be the preferred course. But purchased software should follow the same tenets: it should scale, run on commodity hardware, and be written in or at least be customized using common open programming languages.  It should be extensible from the outside such that all functionality is available to custom programs as callable services.

# Staffing

In order to modernize our IT Infrastructure we need to modernize our IT staff to wield the associated modern tools, languages, and software stack.

The best practice for training IT professional uses a full immersion coding bootcamp technique.

The SSA will put new hires through a 90-day bootcamp and put current staff through a focused a 30-day camp designed for those with IT experience.

We are working to reduce our spend on outside contractors in order to ramp up our staff in preparation for the retirements we anticipate in the next few years. Thirty-seven percent of out IT staff are eligible for retirement in the next five years.

This proactive approach further positions us to execute on the IT Modernization program we require.

It is worth noting here that agile methods require a much higher, sustained, level of engagement from Agency business organizations. This IT modernization effort will have the effect of fundamentally changing the relationship between Systems and our business partners.

# Conclusion

This paper paints several pictures. We describe what a modern IT infrastructure looks like. We propose a modern agile approach to the development of a modern infrastructure. We suggest a roadmap with details to assure you that we know what we are doing. We describe how we will build on a sound modern extensible architecture to enable us to build something that will last awhile. We suggest a plan for building up the staff required to execute on all of the above.

Most importantly we suggest a set of ambitious but imminently achievable business objectives that describe a future state 3-5 years out where the SSA could deliver a customer experience that is on par with the experience delivered today by the best commercial enterprises. This objective is ambitious but feasible.

It is this delightful customer experience that we are asking you to fund. IT modernization is just a platform that enables the delivery of this delightful experience.

The SSA is proving that they can do this now by building out cloud infrastructure, developing a modern cloud-based application, and developing a modern data architecture. But this is just to assure you that we can execute.

We ask for funding to modernize our IT and, at the same time, we will modernize our Agency's business processes to better serve our customers.

Business Processes in Scope for Title II Modernization

# APPENDIX A

The following business process maps outline the key steps and main stakeholders involved in each process. Chris is the name of the representational customer of SSA in this document. Each of the processes typically starts with an event in Chris' life and ends with a communication from SSA to Chris.
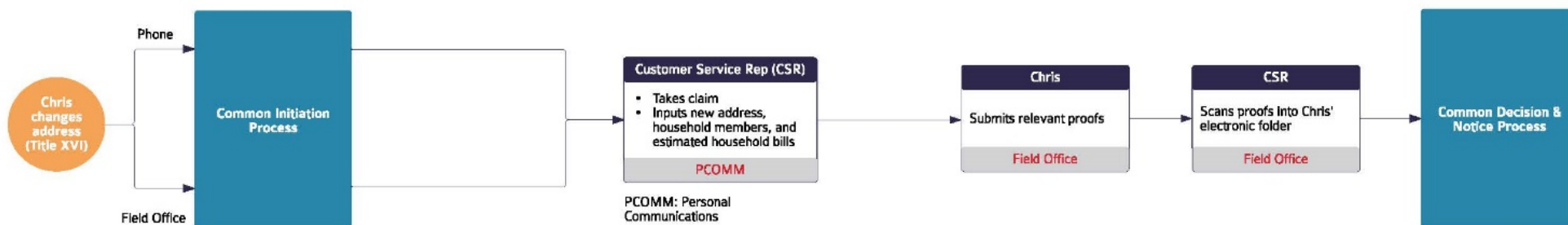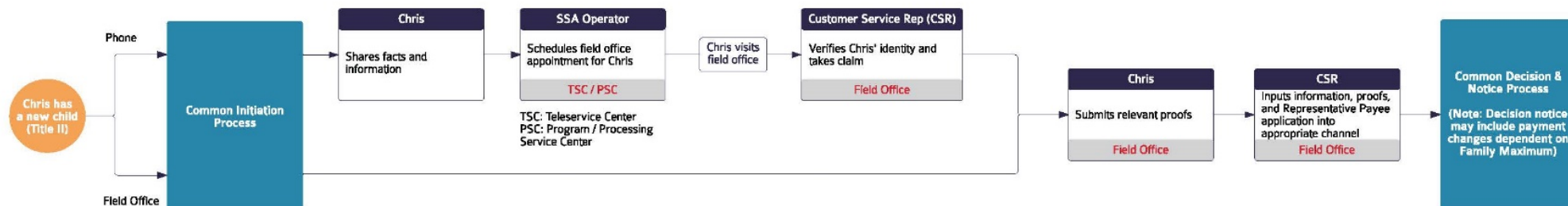
# Non-Disability Post-Entitlements
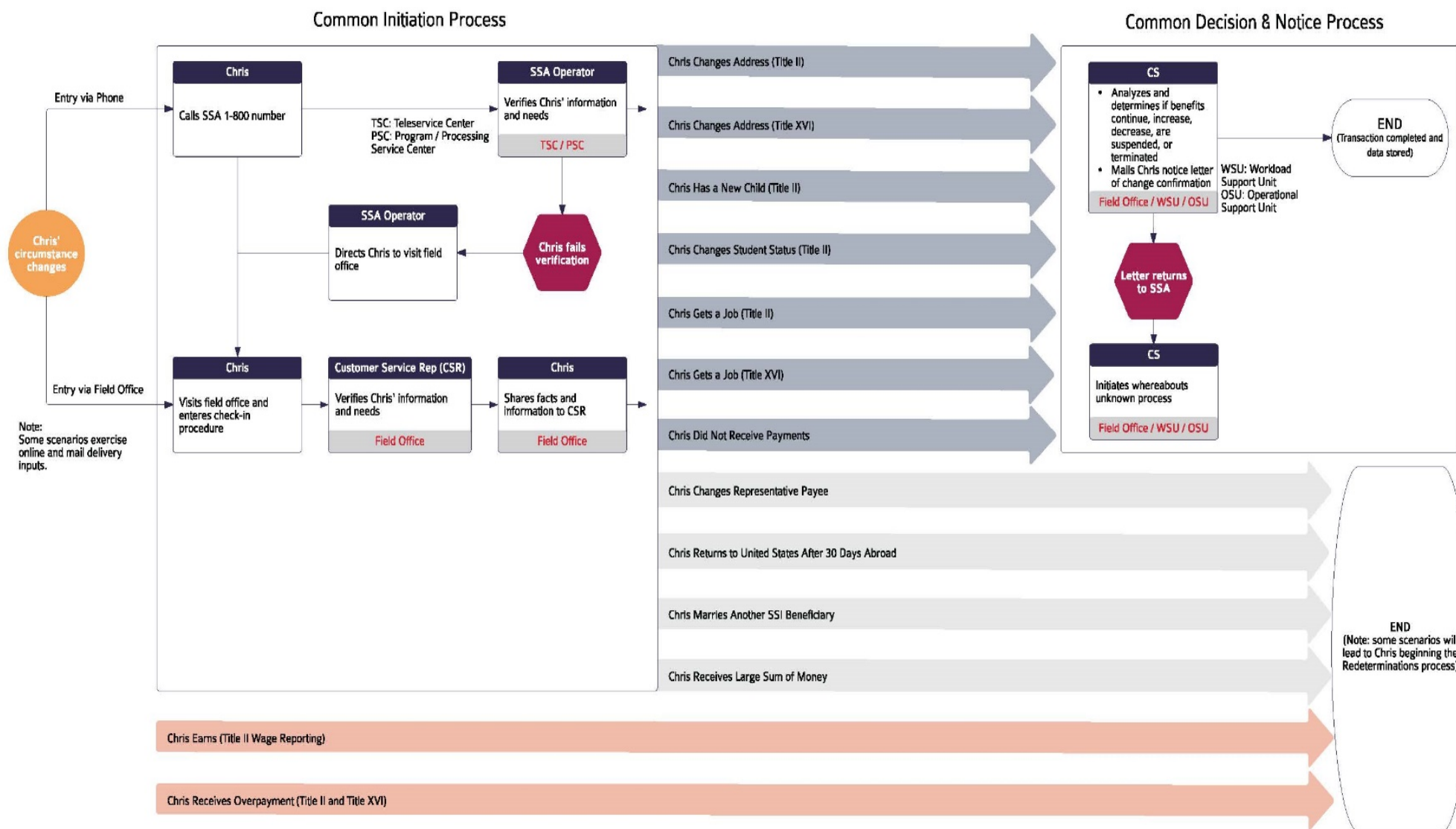
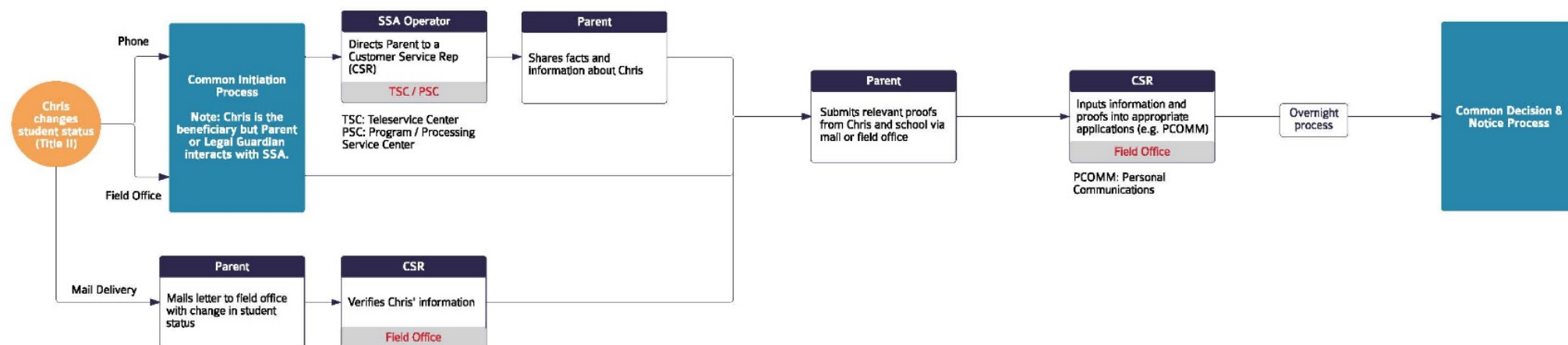# Non-Disability Post-Entitlements: Chris Changes Address (Title II)
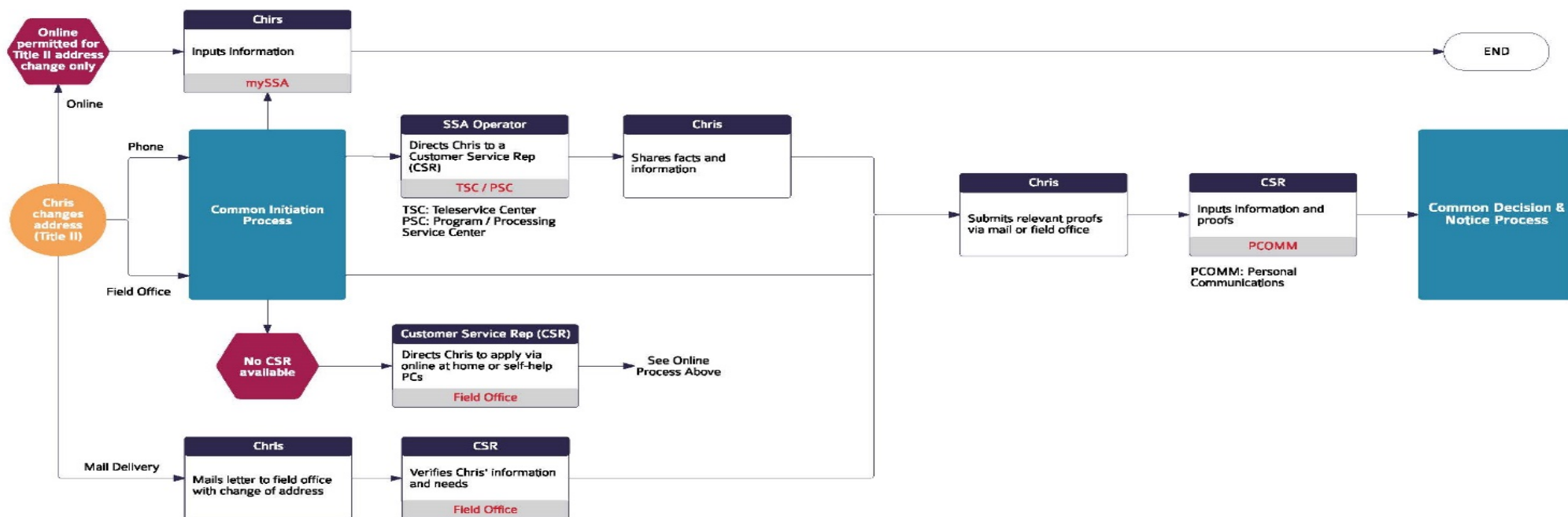


# Non-Disability Post-Entitlements: Chris Changes Address (Title XVI)

# Non-Disability Post-Entitlements: Chris Has a New Child (Title II)
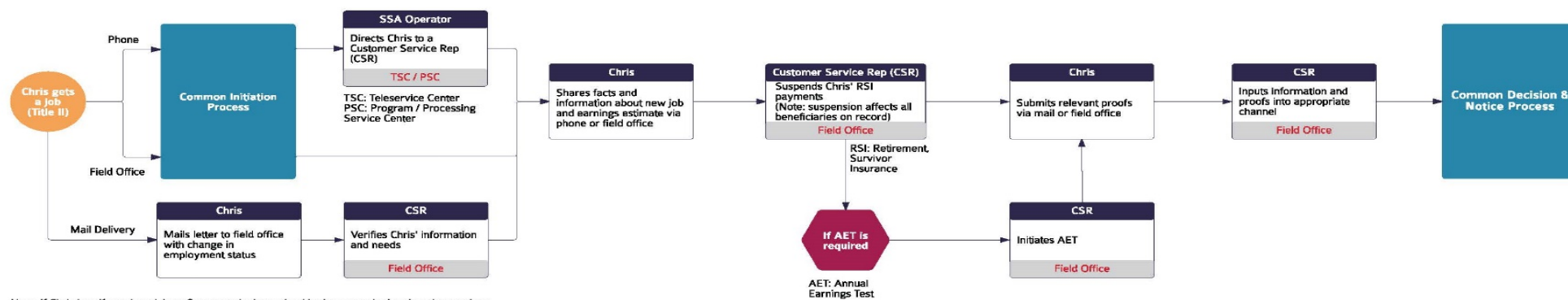


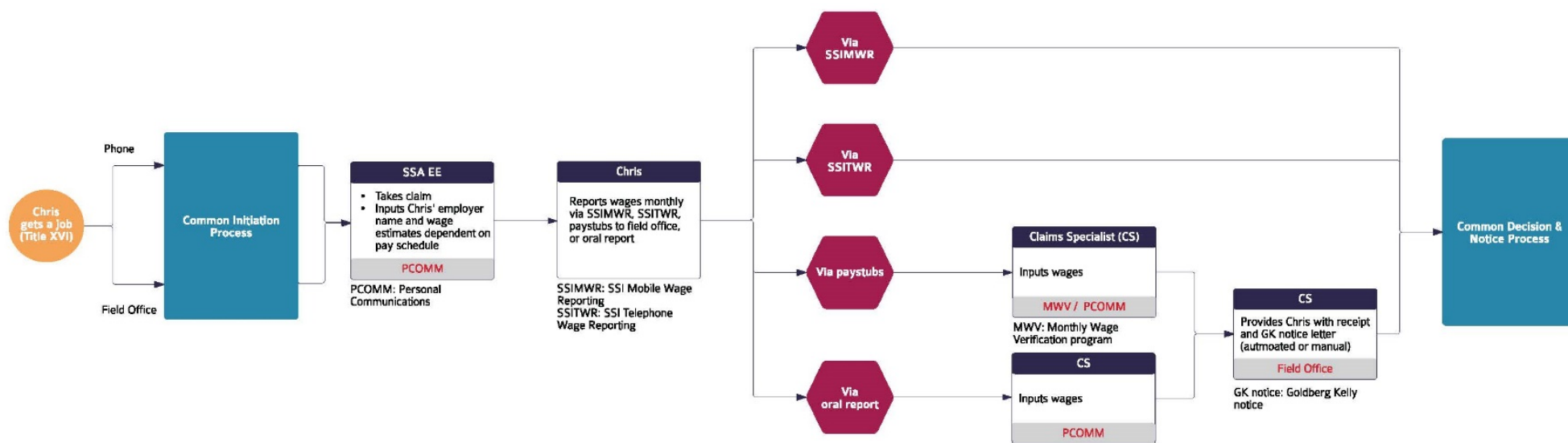# Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)



Note: Chris is eligible for student benefits until age 19 years and 2 months.

# Non-Disability Post-Entitlements: Chris Gets a New Job (Title II)



Note: If Chris is self-employed, benefit amount is determined by hours worked and not by earnings.

# Non-Disability Post-Entitlements: Chris Changes Student Status (Title II)

# **Non-Disability Post-Entitlements:** Chris Has a Not Received Payments



# **Non-Disability Post-Entitlements:** Chris Changes Student Status (Title II)
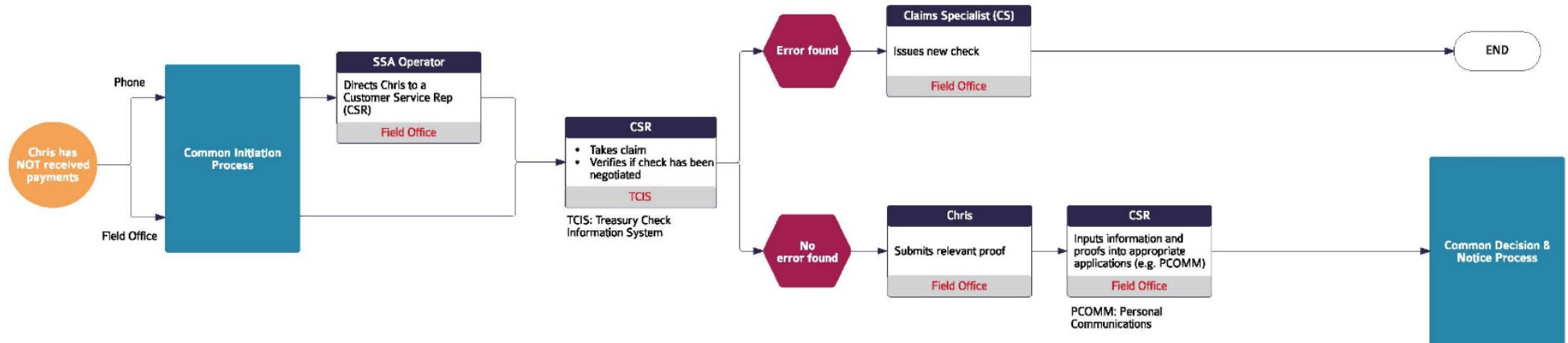
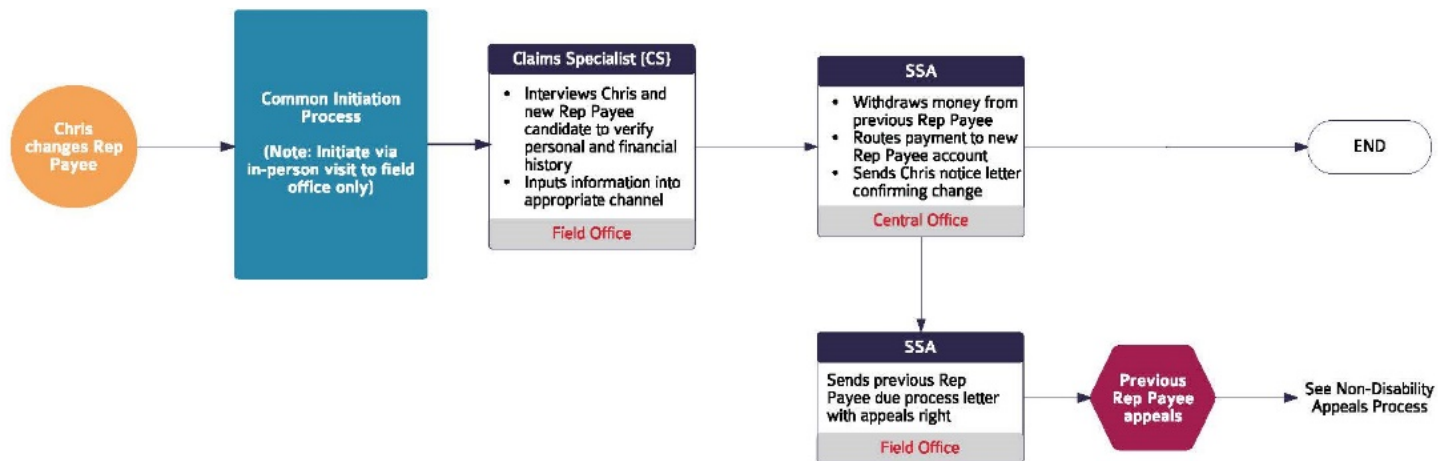# **Non-Disability Post-Entitlements:** Chris Has a New Child (Title II)



# **Non-Disability Post-Entitlements:** Chris Changes Student Status (Title II)
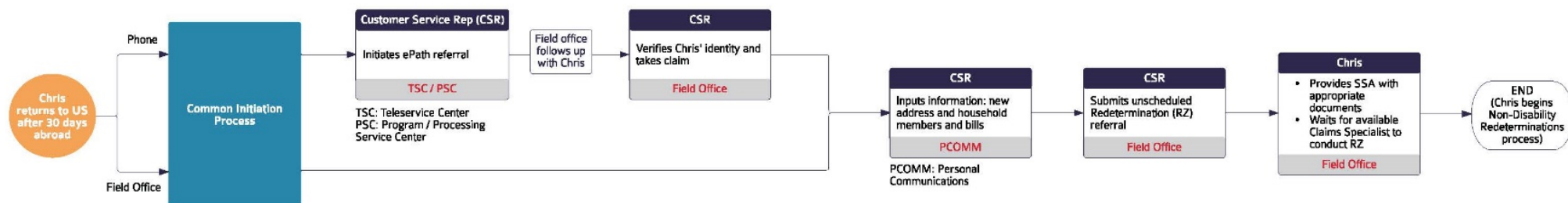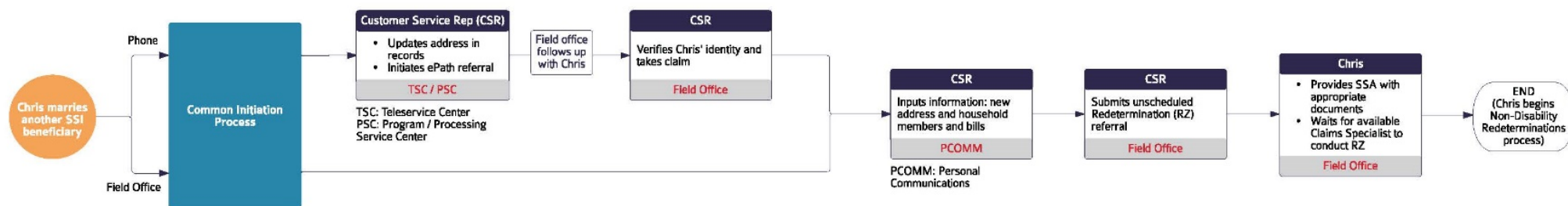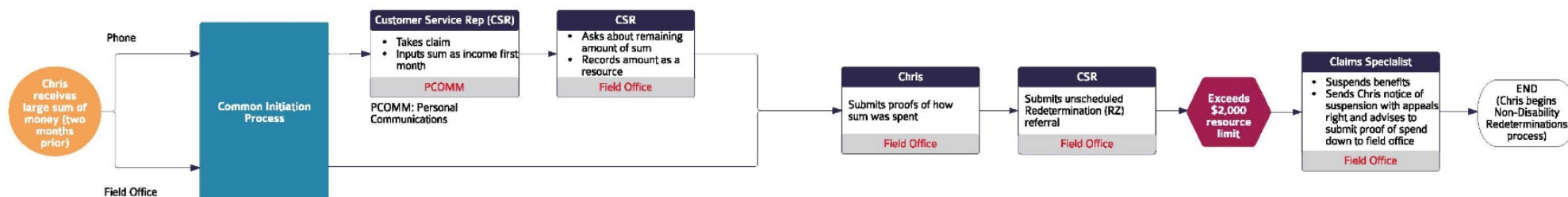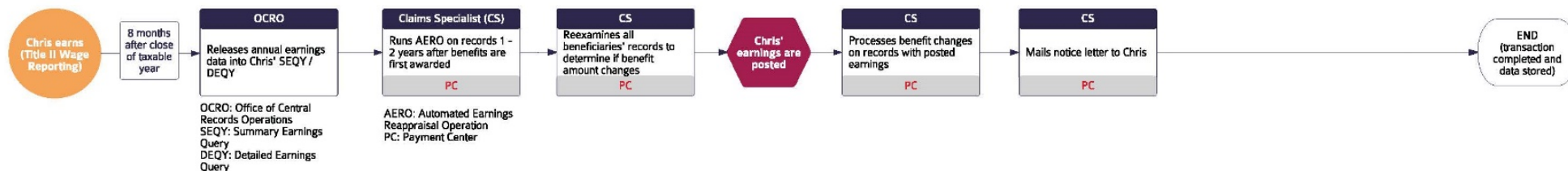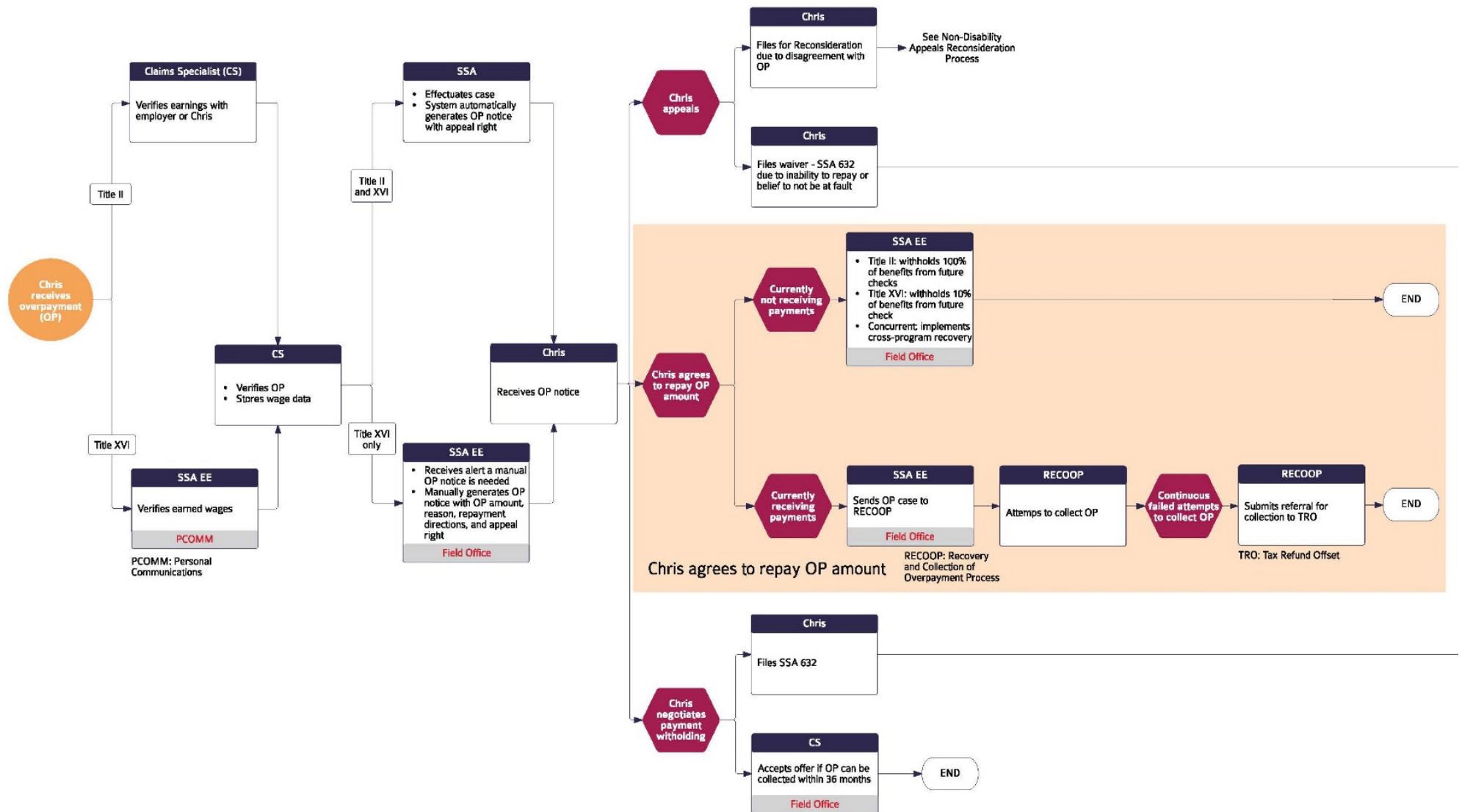
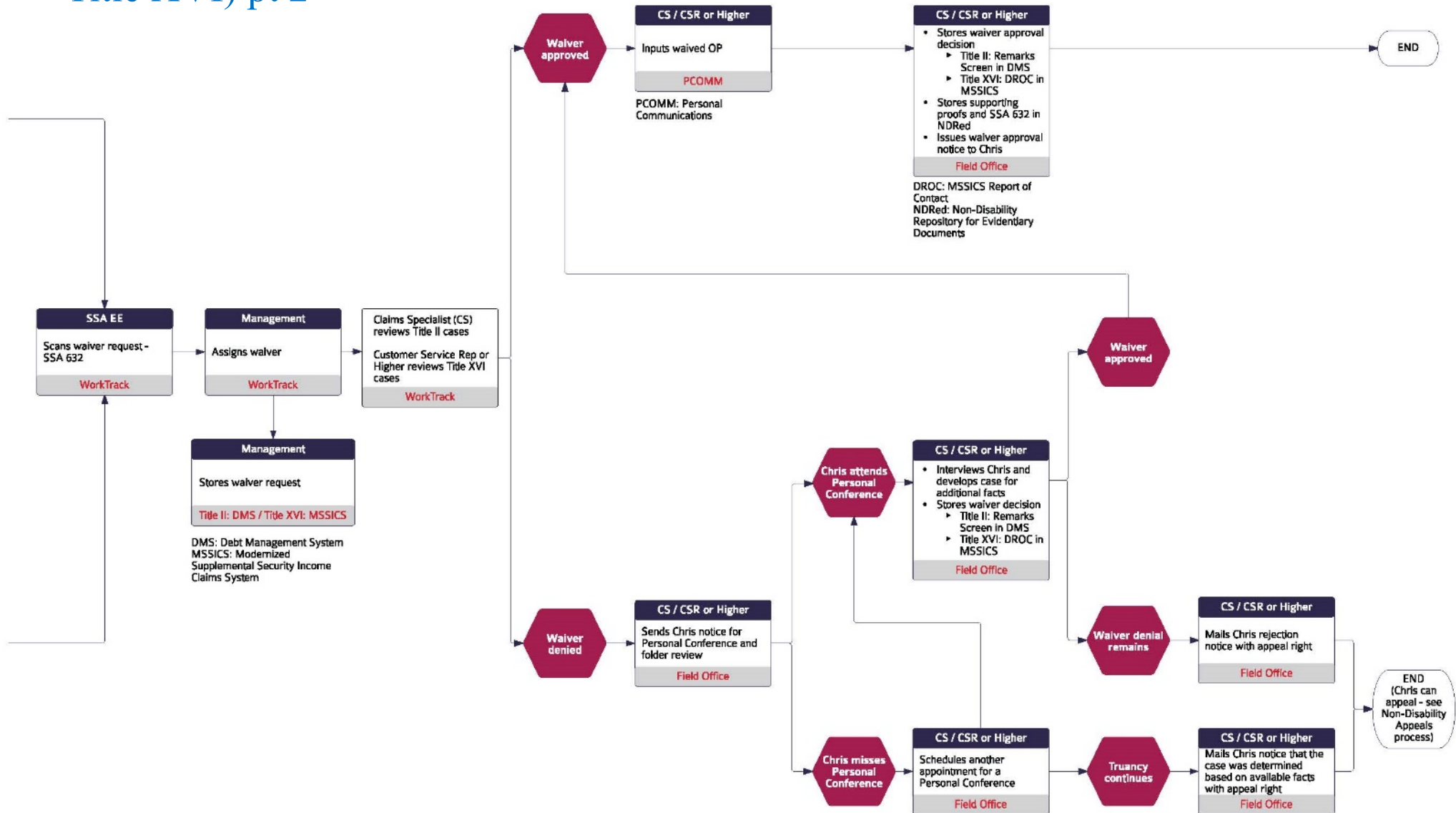# Non-Disability Post-Entitlements: Chris Receives a Large Sum of Money



# Non-Disability Post-Entitlements Chris Earns (Title II Wage Reporting)
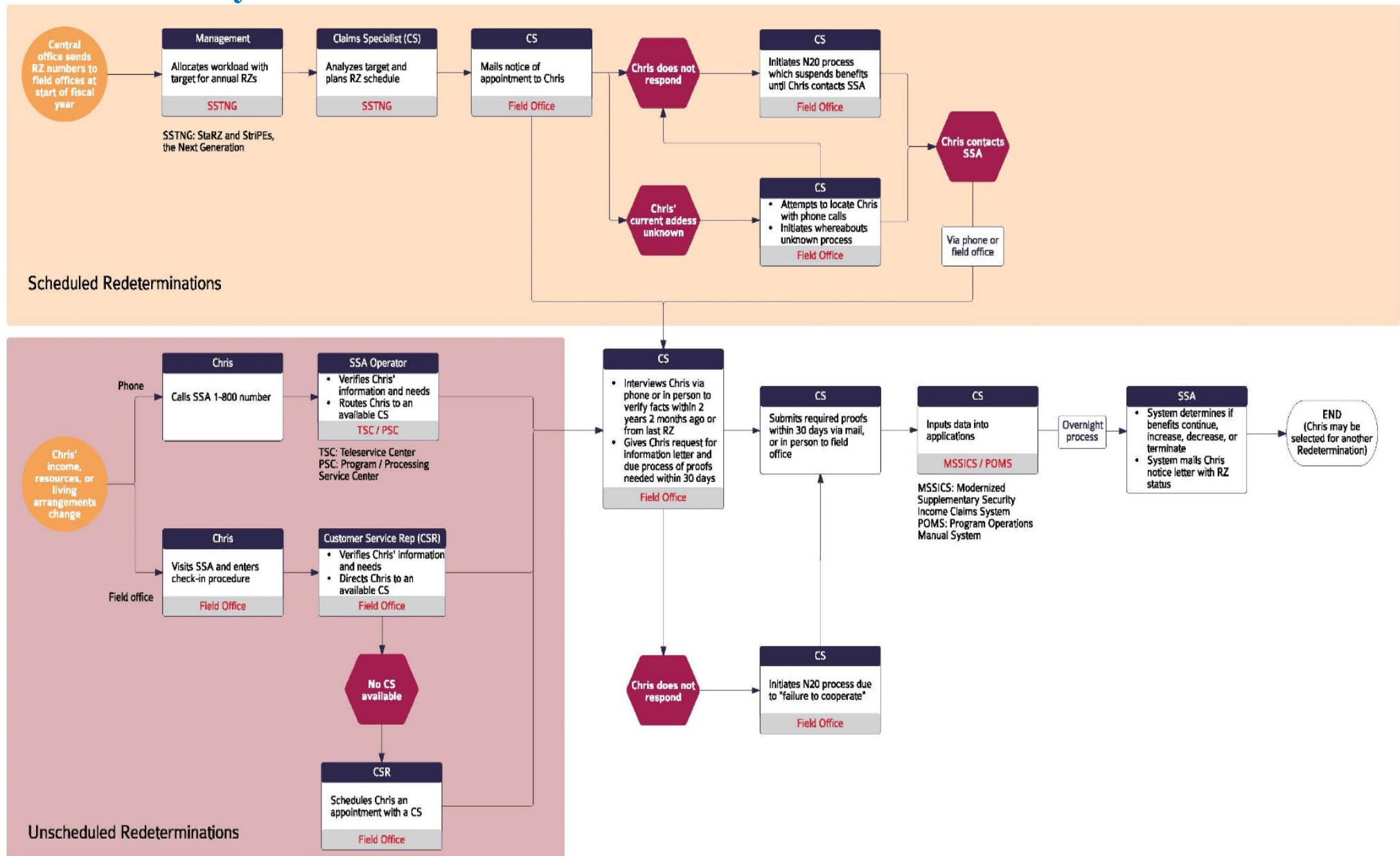
# Non-Disability Post-Entitlements: Chris Receives Overpayment (Title II & Title XVI) pt 1

# Non-Disability Redeterminations



## Scheduled Redeterminations

**Central office sends RZ numbers to field offices at start of fiscal year**

**Management** — Allocates workload with target for annual RZs — SSTNG

**Claims Specialist (CS)** — Analyzes target and plans RZ schedule — SSTNG

SSTNG: StaRZ and StriPEs, the Next Generation

**CS** — Mails notice of appointment to Chris — Field Office

**Chris does not respond**

**CS** — Initiates N20 process which suspends benefits until Chris contacts SSA — Field Office

**Chris' current address unknown**

**CS** — • Attempts to locate Chris with phone calls • Initiates whereabouts unknown process — Field Office

**Chris contacts SSA**

Via phone or field office

## Unscheduled Redeterminations

**Chris' income, resources, or living arrangements change**

Phone

**Chris** — Calls SSA 1-800 number

**SSA Operator** — • Verifies Chris' information and needs • Routes Chris to an available CS — TSC / PSC

TSC: Teleservice Center
PSC: Program / Processing Service Center

Field office

**Chris** — Visits SSA and enters check-in procedure — Field Office

**Customer Service Rep (CSR)** — • Verifies Chris' information and needs • Directs Chris to an available CS — Field Office

**No CS available**

**CSR** — Schedules Chris an appointment with a CS — Field Office

**CS** — • Interviews Chris via phone or in person to verify facts within 2 years 2 months ago or from last RZ • Gives Chris request for information letter and due process of proofs needed within 30 days — Field Office

**Chris does not respond**

**CS** — Initiates N20 process due to "failure to cooperate" — Field Office

**CS** — Submits required proofs within 30 days via mail, or in person to field office

**CS** — Inputs data into applications — MSSICS / POMS

MSSICS: Modernized Supplementary Security Income Claims System
POMS: Program Operations Manual System

Overnight process

**SSA** — • System determines if benefits continue, increase, decrease, or terminate • System mails Chris notice letter with RZ status

**END** (Chris may be selected for another Redetermination)

# Non-Disability Fraud